

METHOD DETECTION LIMITS (MDL) AND REPORTING LIMIT (RL/DLR) REQUIREMENTS FOR ELAP CERTIFICATION (FOR PUBLIC DISTRIBUTION)

**The following policy addresses ELAP requirements for
conducting MDL studies**

METHOD DETECTION LIMITS

1. The MDL procedure as described in 40 CFR 136 Appendix B shall be applied when an MDL study is required.
2. The requirement for conducting an MDL study is **by method***. The MDL study is mandatory only if it is specifically required for the test method.
3. The laboratory shall maintain documentation of MDL study results for all methods that specify that such a study be conducted. If there is no documentation, the laboratory shall be required to conduct the MDL study again.
4. The MDL study shall incorporate all sample preparation procedures and shall be done by **analyte** and **matrix**. **
5. The MDL study is a **one-time** requirement. ***
6. The MDL study must be **reasonable**. The calculated MDL must be less than the spike concentration used to conduct the study and must be greater than 10% of the spiked concentration to be reasonable. If either of these is not met, the study must be repeated. In addition, the results should be reasonably accurate and precise.
7. An MDL study must be conducted each time there is a significant change in the method, for the addition of new analytes or if there is a significant change in the instrument type.
8. Results of MDL studies should be readily available to ELAP upon request. When required to conduct an MDL study, your laboratory should present a well-organized tabular summary of the results. It is at the discretion of the ELAP auditor whether or not raw data supporting the test results needs to be submitted to ELAP or maintained at your laboratory.

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- For EPA drinking water test procedures, please refer to Section 9 of the individual method. MDL studies are required for all EPA 500 series methods and 200.7, 200.8, 200.9, 218.6, 245.1, 300.0, 300.1 and 314.0.
- For EPA wastewater organic test procedures (EPA 600 series methods), please refer to the Method Performance Section.
- For Standard Methods test procedures, the Method Detection Limit procedure is described in Section 1030 E. For Metals (Part 3000), the MDL

requirement is referenced in Section 3020. For Individual Organic Compounds (Part 6000), the MDL requirement is referenced in Section 6020 B. 2. 1.)

- For SW 846 test procedures, the requirement for matrix-specific detection limits is described in Section 4.4.3 of Chapter One. The MDL definition and procedure are described in Section 5.0 of Chapter One. In Chapter 7000A (Metallic Analytes), the MDL requirement as described in Chapter One is referenced in Section 8.8. In Chapter 8000 B (Organic analyses), the MDL requirement as described in Chapter One is referenced in Section 9.1. In addition, please refer to 8000 B, section 2.10 .
- EPA 200/300 series methods **other than** 200.7, 200.8, 200.9, 218.6, 245.1 and 314.0 are described in *Methods for the Chemical Analysis of Water and Wastes* (EPA-600 4-79-020). The **Metals** Chapter does not describe MDL procedures. There is a reference to detection limits (Section 3.3) and Table 1 lists detection limits for the various techniques. **MDL studies are recommended but cannot be required for these test procedures.**

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- For MDL studies for SW 846 test procedures, the laboratory shall use reagent water for aqueous matrices and sand or sandy, loam soil for solid matrices to satisfy ELAP requirements. A complete listing of matrices is described in Chapter Two (Section 2.2.1, Physical State(s) of Sample).

- Some methods (e.g. 200.8 and 300.0) may **recommend** annual or semi-annual MDL studies. Once again, these are recommendations.

NOTE 1: THIS LIST IS NOT INCLUSIVE AND IS SUBJECT TO CHANGE.

NOTE 2: Historical data may be used by the laboratory to construct MDL studies.

NOTE 3: Recently promulgated 1600 series methods (e.g. 1631, 1664) cite the requirement for an MDL study in method Section 9.2.

REPORTING LIMITS

1. Reporting Limits (RL) must be **defensible**. The RL must be greater than or equal to the results of the MDL study by analyte and method. An RL below the MDL study results is unacceptable.
2. The client and/or end-user of test data determine the RL. ELAP does not specify RLs.
3. For Drinking Water, there are State mandated Detection Limits for Reporting (DLR). For Drinking Water, the laboratory **must** conduct the MDL study again if MDL results are above state mandated DLRs.

4. The laboratory **should** conduct a RL study to verify its validity for all method/analyte/matrix combinations where an MDL study is required. This is strongly recommended.
5. The laboratory **should** run their lowest calibration standard at or near their RL. This is a strong recommendation.

EFFECTIVE DATE: JUNE 1, 2002